STAGE OF WATER IN RIVERS.

In the following table are shown the danger points at the various river stations, the highest and lowest stages for October, 1884, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark. October, 1884.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River:	Ft. In.		Ft. In.		Ft. In.	Ft. In.
Shreveport, Louisiana	29 9	5, 6, 7	2 1	27, 28, 29	0 2	1 11
Arkansas:						
Little Rock, Arkansas	33 0	8	12 4	26	3 5	8 11
Fort Smith, Arkansas	.....	5	5 3	22	*—3 10	9 1
Missouri:						
Yankton, Dakota	20 0	2, 3, 4	10 9	31	8 3	2 6
Omaha, Nebraska	16 0	4, 5	8 0	23, 24	6 10	1 2
Leavenworth, Kansas	21 0	13	18 0	1	5 1	12 11
Mississippi:						
Saint Paul, Minnesota	14 6	10	6 6	1	3 10	2 8
La Crosse, Wisconsin	18 0	10, 11	8 9	28, 29, 30	5 1	3 8
Dubuque, Iowa	21 10	10	14 7	31	9 1	5 6
Davenport, Iowa	15 0	11, 19	11 4	31	7 6	3 10
Keokuk, Iowa	14 0	9	13 4	31	8 10	4 6
Saint Louis, Missouri	30 0	2	22 3	31	17 5	4 10
Cairo, Illinois	40 0	5	19 8	25	15 9	3 11
Memphis, Tennessee	34 0	7	14 1	1	5 9	8 4
Vicksburg, Mississippi	41 0	13	18 0	1	5 1	12 11
New Orleans, Louisiana†	—2 6	14, 15, 16, 27	—10 7	7	—12 6	1 11
Ohio:						
Pittsburg, Pennsylvania	20 0	5	6 7	26	0 3	6 4
Cincinnati, Ohio	50 0	14	5 1	31	2 11	2 2
Louisville, Kentucky	24 0	3, 4	3 11	9 to 12, 15	2 7	1 4
Cumberland:						
Nashville, Tennessee	42 0	31	1 4	25, 26, 27	*—0 2	1 6
Tennessee:						
Chattanooga, Tennessee	33 0	31	1 1	19, 20, 21	0 2	0 11
Monongahela:						
Pittsburg, Pennsylvania	29 0	5	6 7	26	0 3	6 4
Savannah:						
Augusta, Georgia	.....	13	5 7	15	4 1	1 6
Willamette:						
Portland, Oregon	.....	13	5 0	1	0 11	4 1
Sacramento:						
Red Bluff, California	.....	15	1 6	1 to 12	0 10	0 8
Sacramento, California	.....	15	10 1	1, 2	7 9	2 4
Mobile:						
Mobile, Alabama	.....	27	18 2	9	15 7	2 7
Colorado:						
Yuma, Arizona	.....	.....	.....	.....	.....	.....

* Below bench mark. † Below high-water mark of 1874 and 1883.

At Nashville, Tennessee, the Cumberland river was not navigable at any time during the month; on the 25th, 26th, and 27th, the river was two inches below the low-water mark of September 5, 1863.

The Tennessee river at Chattanooga was navigable for small steamers at the close of the month.

HIGH TIDES.

Eastport, Maine, 6th.
New River Inlet, North Carolina, 10th, 11th, 17th.
Jacksonville, Florida, 14th, 15th.
Indianola, Texas, 1st to 6th, 23d, 24th.
Scott's Hill, North Carolina, 11th, 13th, 23d.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for October, 1884, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 82.14 per cent. The percentages for the four elements are: Weather, 87.23; direction of the wind, 80.58; temperature, 78.61; barometer, 80.64 per cent. By geographical districts, they are: For New England, 83.03; middle Atlantic states, 85.77; south Atlantic states, 87.24; eastern Gulf states, 87.32; western Gulf states, 86.27; lower lake region, 79.08; upper lake region, 80.52; Ohio valley and Tennessee, 81.40; upper Mississippi valley, 77.98; Missouri valley, 73.34; north Pacific coast region, 80.53; middle Pacific coast region, 89.17; south Pacific coast region, 86.67. There were sixteen omissions to predict out of 3,211, or 0.50 per cent. Of the 3,195 predictions that have been made, one hundred and twenty-six, or 3.94 per cent., are considered to have entirely failed; one hundred and fifty-five, or 4.85 per cent., were one-fourth verified; three hundred and eighty-one, or 11.93 per cent., were one-half verified; five hundred and fifty-two, or 17.28 per cent., were three-fourths verified; 1,981, or 62.00 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

Professor T. C. Mendenhall, director of the Ohio Meteorological Bureau, reports as follows: The percentage of verification of railway signals for the month was, 91 for temperature and 87 for rain.

CAUTIONARY SIGNALS.

During October, 1884, two hundred and five cautionary signals were ordered. Of these, one hundred and forty-nine or 72.2 per cent., were justified by winds of twenty-five miles or more per hour at or within one hundred miles of the station. Forty-two cautionary off-shore signals were ordered, of which number thirty-three, or 78.6 per cent., were fully justified, both as to direction and velocity; thirty-seven, or 88.1 per cent., were justified as to direction; and thirty-nine, or 92.9 per cent., were justified as to velocity. Forty-one cautionary northwest signals were ordered at the lake ports, of which, twenty, or 48.8 per cent. were justified both as to direction and velocity; thirty-three, or 80.5 per cent. were justified as to direction only, and twenty-three, or 56.1 per cent. were justified as to velocity only. Of the forty-two cautionary off-shore signals that were ordered, twenty were changed from cautionary displays, and of the forty-one northwest signals ordered, all but four were changed from cautionary displays. Two hundred and eighty-eight signals of all kinds were ordered, two hundred and two, or 70.1 per cent., being fully justified. These do not include signals ordered at display stations where the velocity of the wind is only estimated. Eleven signals were ordered late. In one hundred cases winds of twenty-five miles or more per hour were reported, for which no signals were ordered.

TEMPERATURE OF WATER.

The following table shows the highest and lowest temperatures of the water at the several stations; the monthly range of water temperature; the average depth at which the observations were made; and the mean temperature of the air at the stations:

Temperature of water for October, 1884.

Station.	Temperature at bottom.		Range.	Average depth, feet and inches.		Mean temperature of the air at station.
	Max.	Min.				
	°	°	°	ft.	in.	°
Atlantic City, New Jersey	72.3	57.0	15.3	2	1	58.5
Alpena, Michigan	58.0	39.0	19.0	11	11	48.3
Augusta, Georgia	84.6	64.5	20.1	4	7	70.0
Baltimore, Maryland	73.0	59.8	13.2	9	11	60.2
Block Island, Rhode Island	65.5	51.1	14.4	7	2	54.9
Boston, Massachusetts	62.2	48.3	13.9	21	0	52.3
Buffalo, New York	68.0	50.2	17.8	10	0	52.0
Canby, Fort, Washington Territory	56.7	51.7	5.0	17	8	52.5
Cedar Keys, Florida	81.6	69.8	11.8	10	8	74.3
Charleston, South Carolina	82.0	66.9	15.1	40	6	71.2
Chicago, Illinois	62.7	48.4	14.3	7	11	56 4
Chincoteague, Virginia	79.2	44.0	35.2	4	0	62.4
Cleveland, Ohio*	69.5	51.7	17.8	14	0	55.7
Detroit, Michigan	66.0	47.6	19.0	24	1	56.3
Delaware Breakwater, Delaware	75.5	59.7	15.8	8	3	67.1
Duluth, Minnesota	51.5	41.9	9.6	10	3	46.7
Eastport, Maine	51.5	47.7	3.8	15	0	45.4
Escanaba, Michigan	59.8	46.6	13.2	17	10	47.5
Galveston, Texas	83.5	65.5	18.0	13	0	74.8
Grand Haven, Michigan	67.4	45.4	22.0	19	0	54.1
Indianola, Texas	84.2	62.4	21.8	9	5	74.0
Jacksonville, Florida	83.2	70.0	13.2	18	0	72.8
Key West, Florida	83.7	76.6	7.1	17	5	78.3
Mackinaw City, Michigan	59.8	46.5	13.3	10	0	48.8
Macon, Fort, North Carolina	82.0	64.2	17.8	6	11	67.7
Marquette, Michigan	55.5	42.7	12.8	10	0	47.5
Milwaukee, Wisconsin	55.2	47.7	7.5	8	0	53.3
Mobile, Alabama	84.4	69.5	14.9	16	9	72.2
New Haven, Connecticut	70.0	50.0	20.0	15	5	53.2
New London, Connecticut	66.0	52.6	13.4	11	9	54.6
New York City	69.2	53.0	16.2	15	10	56.1
Norfolk, Virginia	78.2	53.8	24.4	10	6	64.6
Pensacola, Florida	84.8	67.1	17.7	17	7	73.8
Portland, Maine	56.7	47.6	9.1	16	0	50.6
Portland, Oregon	57.5	49.7	7.8	52	8	51.2
Sandusky, Ohio	71.0	47.0	24.0	10	0	56.6
Sandy Hook, New Jersey	71.4	51.8	19.6	1	10	57.2
San Francisco, California	57.4	54.8	2.6	34	7	56.9
Savannah, Georgia	82.6	66.2	16.4	10	6	70.6
Smithville, North Carolina	81.5	65.8	15.7	10	9	68.0
Toledo, Ohio	69.7	47.5	22.2	10	10	56.3
Wilmington, North Carolina	80.0	66.0	14.0	18	9	68.5

* Record for twenty-eight days.